

## 8.1 Forces

When an object is moved, then a force has been applied to it.

Force is a vector quantity as it has \_\_\_\_\_ (measured in \_\_\_\_\_) and \_\_\_\_\_ (given as a bearing or an angle).

Force can also be given in component form, e.g.,  $F = (3i + 4j)N$  or  $F = \begin{pmatrix} 3 \\ 4 \end{pmatrix} N$ .

### Common Forces Acting on an Object

#### ***Weight:***

The force on an object due to the \_\_\_\_\_ of the earth. Modelled vertically \_\_\_\_\_.

#### ***Normal Reaction:***

This is a \_\_\_\_\_ force which pushes \_\_\_\_\_ to counteract the weight of an object on a surface. The normal reaction is always \_\_\_\_\_ (normal) to the surface on which the object is placed. If the object is at rest, then the weight is \_\_\_\_\_ to the normal reaction.

**Friction:**

This is a \_\_\_\_\_ force which appears due to the \_\_\_\_\_ surfaces trying to move relative to each other. There is no friction between surfaces described as \_\_\_\_\_.

*Friction \_\_\_\_\_ the intended direction of motion.*

If the object does not move then the frictional force is \_\_\_\_\_ in magnitude to the pulling force.

**Thrust:**

If an object is \_\_\_\_\_ by a rod, then the force provided by the rod, which opposes the weight, is known as the thrust.

**Tension:**

If an object is \_\_\_\_\_ by a string, the force in the string is tension.

**Newton's 1<sup>st</sup> Law** states that:

An object will \_\_\_\_\_ or continue to move with \_\_\_\_\_ velocity ( $a=0\text{ m s}^{-2}$ ) unless an \_\_\_\_\_ force is applied to it.

*When a particle is in \_\_\_\_\_, the resultant force, in any direction will be \_\_\_\_\_.*